UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,490	01/09/2002	Yuki Nakamura	2271/66507	9287

7590 09/20/2007

Ivan S. Kavrukov
Cooper & Dunham LLP
1185 Avenue of the Americas
New York, NY 10036

EXAMINER	
ANGEBRANNDT, MARTIN J	

ART UNIT	PAPER NUMBER
1756	

MAIL DATE	DELIVERY MODE
09/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/044,490	NAKAMURA ET AL.	
	Examiner	Art Unit	
	Martin J. Angebranndt	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/4/07 & 6/25/07*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *21,24,27,30,44-54,58-61 and 63-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *21,24,27,30,44-54,58-61 and 63-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *5/4/07*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. The response of the applicant has been read and given careful consideration. Responses to the arguments of the applicant are presented after the first rejection to which they are directed.

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 51-54 and 58-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. EP 1058249, in view of Mizuno et al. EP 1047056.

Yamada et al. EP 1058249 in examples have a polycarbonate substrate, 50 nm ZnS-SiO_2 layer, a 15 nm $Ag_{0.5}In_8Sb_{64}Te_{27}Ge_{0.5}$ recording layer, a 25 nm ZnS-SiO_2 layer, a 120 nm Al alloy reflective layer and a protective layer, which is used at 8X and evidences 3T jitter of 31 ns after 100 overwrites (the sum of the Sb andTe content is 91) [0085-0092]. The AgInTeSb compositions can be $Ag_{0\text{-}10}In_{2\text{-}12}Sb_{55\text{-}70}Te_{22\text{-}32}Ge_{0\text{-}5}$ [0041-0047]. The addition of various

materials including B,N,C,Si,Ge and Sn as impurities in amounts of up to 5% to improve the performance and the reliability of the recording layer is disclosed. [0046]. Also note examples 6-8 which use Ge, C and N as impurities. The reflective layer can be Al,Au,Ag,Cu, Ta and alloys thereof with additives such as Cr, Ti, Si, Cu, Ag, Pd, or Ta [0071].

Mizuno et al. EP 1047056 teach phase change optical recording media using compositions having SbTe and additives including at least one of Ge and the like [0053]. Reflective layer compositions include Al alloys with 0.2 to 2.0 % Ta, Ti, Co, Cr, Si, Sc, Hf, Pd, Pt, Mg, Zr, Mo or Mn to increase durability, deposition rate and volume resistivity [0183]. The use of Ag alloys including 0.2 to 5 % Ti, V, Ta, Nb, W, Co, Cr, Si, Ge, Sn, Sc, Hf, Pd, Rh, Au, Pt, Mg, Zr, Mo, or Mn in increase heat dissipation, increase productivity and stability [0187-0188].

It would have been obvious to modify example 6 in table 1 of Yamada et al. EP 1058249 by decreasing the amount of Te by at least 1 % based upon the ranges taught at [0041-0047] of Yamada et al. EP 1058249 and to use Al reflective layers containing 0.3-2.0% of Si, Cr, Ti or Ta or Ag layers containing 0.2 to 4% of Au, Pd, Pt, or Ti as disclosed by Mizuno et al. EP 1047056 in place of the single reflective layer composition disclosed with a reasonable expectation of forming a useful phase change optical recording medium based upon the disclosure of equivalence by Mizuno et al. EP 1047056 and the direction to the use of additives to the reflective layer by Yamada et al. EP 1058249 at [0071].

The use of Yamada et al. EP 1058249 which evidences the use of octa-speed recording at velocities of 9.6-11.2 m/s for sample 6 and for samples 3 and 8 which have lower Te and higher Sb content refute the arguments about small changes in the Te amount having a large effect ion the performance in the composition such that the modified

compositions would fall outside the scope of the claims. Yamada et al. EP 1058249 addresses the issue of ability to record information at **a** velocity in the range of 9-30 m/s.

5. Claims 44-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osakabe '763**, in view of** Ando et al. '175 and Suzuki et al. '780.

Osakabe '763 teaches a test recording where the laser power is varied between 11 and 18 mW in 15 (0.5 mW) steps to record test information in the power claibration area. (5/40-60)

Ando et al. '175 describes the embossing of data relating to disk size, read out rate, recording density, serial numbers, linear velocity conditions, read power, peak power, base power and manufacture information (15/55-16/9)

Suzuki et al. '780 teach the determination of the performance characteristics of an optical recording medium including the optimum recording power (abstract and 4/53+) and the sensitivity of the medium (gamma) (3/3-35 and 4/12-5/59). The use of both of these allows a range (margin) of useful laser powers and prevents selection of an improper laser power. (4/12-5/59.

To support the assertion that embossing information relative to the performance characteristics of the optical recording media would have been obvious, the examiner cites Ando et al. '175 which teaches the provision of control data and specification data for the optical recording medium in a non-write-able portion of the medium and Suzuki et al. '780 which describe specific methods of characterizing the performance and holds that it would have been obvious to one skilled in the art to modify the media of Osakabe '763 by determining the performance characteristics and recording this information as described by Suzuki et al. '780 to

prevent improper choice of laser powers and to provide at least some of this data as embossed information as described by Ando et al. '175 to allow the user for forgo the optimization process.

The applicant's arguments neglects to recognize that the values of R and S actually correspond to real parameters in the recording process, but these values are not recorded in the medium as the values of P_t and P_o are, but are chosen when writing to the medium. These really limit the process of use, not the medium as they are never written into the medium. The examiner reiterates that the claims are to the media, not the process of use. Were the claims directed to the process of use, the applicant's arguments would be at least more persuasive as the reference determines the same basic information (the optimum operating parameters) for the medium. In particular the optimum recording power range and the sensitivity of the medium.

The only information recorded is that of the test runs, The claims do not recite that the values of S or R are stored on the medium. The applicant should insert language clearly stating this into the claims and address the issue raised by the teachings of Ando et al. '175. The recording of test runs is taught in Suzuki et al. EP 1111598 or Suzuki et al. '780. The current language describes selecting the values of S and R and calculating other, but does not describe where they are stored. Currently this includes both on the media and also on another drive on the computer.

The applicant's arguments neglect the fact that S are the desired values relating to the g(P) which corresponds to the sensitivity of the medium described by Suzuki et al. '780, the optimum recording power is also determined in Suzuki et al. '780 and the R corresponds the power margin discussed in Suzuki et al. '780. The applicant refers to P_t which is unrecited in the claim. The optimum recording value is P_o in the claims. Further, this value, the power margin

and the sensitivity (gamma) are described in Suzuki et al. '780. The calculation of g(p) yields a sensitivity to power changes and the choosing a single value for S within the range defines the linear portion of the sensitivity curve (D log H) and the minimum (base) recording power. The R value defines the range upward from that and defines the upper range of the useful power range with the medium. These parameters correspond to those discussed by Suzuki et al. '780, but go under different names. The rejection stands.

Claims 44-49 are directed to the optical recording medium, The claims describe the writing test recordings with recording powers P (the test recordings are written onto the medium). P_t , P_o, S and P_s are determined by reading out the test recordings and then performing calculations in the computer (not the medium) and the claims do not describe any of P_t , P_o, S and P_s being stored on the medium to materially change it. The claims therefore read on an optical recording medium having a test pattern recorded therein. The applicant's representative also fails to appreciate that the claims do not require storage of the laser powers. The claims limitations are almost exclusively describing processes, which are performed by the computer alone, without interaction with the recording medium. The examiner has interpreted the claims as requiring the information regarding the test recording recorded on the medium. The applicant states that R and S values are recorded in the medium, but the claim language does not reflect this as the claims only recite the step of performing the test recording where data is necessarily written into medium.

6. Claims 21,24,27,30,49-54,58-61and 63-66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. EP 0717404 or Yamada et al. EP 0735158, in view of Yamada et al. EP 1058249, in view of Mizuno et al. EP 1047056.

Yamada et al. EP 0717404 in examples 2 and 3 in table 2 have the compositions shown in tables 2 as the recording layer in media comprising a polycarbonate substrate, a 200 nm ZnS-SiO_2 lower dielectric layer, a 25 nm AgInTeSb recording layer, a 30 nm ZnS-SiO_2 upper dielectric layer, a 100 nm Al alloy reflective layer and a 5 micron UV cured resin as the protective layer. The sum of the Te and Sb are 91 and 85.4 % respectively. Comparative examples 1 and 2 use the same structure and meet the limitations of the claims. (table 2, cont). The sum of the Te and Sb are 99.5 and 95.9 % respectively. The benefits of adding 2% nitrogen is illustrated in table 3 on page 12. The addition of Ti, Cr or Si to the reflective layer is disclosed. (8/29-31). The maximum number of overwrites is defined by the number before the 1 sigma jitter is above 35 ns. (13/50-51). The addition of Ge, C, N, O, Al, Ga, Se, Pd, or Pb to the recording layer is disclosed. (7/56-58). Level three describes discs with a C/N or 55 dB and erasability of –35dB. (10/16-17) The level denoted in the table corresponds to the conditions for determining the number of overwrites shown in the tables.

Yamada et al. EP 0735158 in examples 3, 5-7 comparative example 2 and 3 in table 2 have the compositions shown in tables 2 as the recording layer in media comprising a polycarbonates substrate, a 200 nm ZnS-SiO_2 lower dielectric layer, a 25 nm recording layer, a 30 nm ZnS-SiO_2 upper dielectric layer, a 100 nm Al alloy containing 1 % Si as the reflective layer and a 10 micron UV cured resin as the protective layer. The sum of the Te and Sb are 85.5, 92,92,91 and 94.5 % respectively. Example 10 in table 2 on page13 also includes nitrogen. The addition of various elements to the recording layer is disclosed. (7/48-52). The use of various alloys of Al, Au, Ag and Cu are disclosed. (9/26-27). Level three describes discs with a C/N or

55 dB and eras ability of –35dB. (10/16-17) The level denoted in the table corresponds to the conditions for determining the number of overwrites shown in the tables.

It would have been obvious to one skilled in the art to modify the cited inventive examples of Yamada et al. EP 0717404 having the level 3 performance such as example 3 of Yamada et al. EP 0717404 in a manner similar to example 17 shown in table 3 (page 12) but using Ge rather than nitrogen based upon the disclosure to add Ge at (7/56-58) in place of nitrogen based upon this teachings of equivalence and that of Yamada et al. EP 1058249 evidencing that the addition of either of these elements resulting in improvements in the thermal stability of the marks formed and more reproducible mark dimensions with a reasonable expectation of forming a useful optical recording medium with level 3 performance and jitter of less than 35 ns and to use thinner recording layers to improve the responsivity and allow higher speed recording such as that taught by Yamada et al. EP 1058249 noting the thicknesses for the recording layer of less than 30 nm by Yamada et al. EP 0717404 at 7/24-25, 10-100 nm in Yamada et al. EP 0735158 at 6/52-55 and 12-30 nm by Yamada et al. EP 1058249 at [0055] which are held to give a reasonable expectation of forming a useful optical recording medium with the desired performance..

The applicant is claiming the medium in a product by process format, therefore contrary to the position of the applicant, a reasonable assertion by the examiner, based in part upon the properties of the media reported in the prior art for the media of the of the prior art, that the media of the prior art and the claimed media are the same places the burden firmly upon the applicant to show that the process of the prior art does not result in media within the scope of the coverage sought. There are no requirements in MPEP 2113

that the exact process used be the same. Phase change recording media are conventionally initialized in the art prior to use. The applicant's characterization of the reference's teachings (as well as those of the other references applied) through mere restatement of the abstract is nowhere near a reasonable treatment of the complete teachings of the reference.

The examiner points to the high ratings of the various examples cited. These characteristics would not be present if the recording layer s was damaged. Further, applicant's own specification states "[0224] When the values shown in FIGS. 4 and 5 are compared, it is found that DOW 1 jitter tends to increase with decreasing energy density E. The range found for the E value is E>1000 J/m.sup.2, for which jitter exceeds the **35** nsec that is specified as a standardized jitter value in the Orange Book " Bearing in mind the recording medium needs to conform with standards to be player reliably. The examiner holds that it is anticipated by the cited examples as it makes no sense to describe a medium as acceptable if it cannot be played on a conventional CD player. The examiner has pointed to the performance characteristics of the media, which meet or exceed the benefits ascribed to the resultant media. Therefore the examiner is correct in making the rejections asserted.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP 1058248 teaches using laser powers in the 13-17 mW range [0093].

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Martin J Angebranndt
Primary Examiner
Art Unit 1756

09/14/2007